REMARKS

Claims 1-30 are pending in this application. Claims 1-30 stand rejected. By this Amendment, claims 1, 2, 12, 17, 23, and 26-28 have been amended. The amendments to the claims have been made to improve the form thereof. In light of the amendments and remarks set forth below, Applicants respectfully submit that each of the pending claims is in immediate condition for allowance.

Claims 1-10, 12, 17, 23, and 26-29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over review of Scientific Instruments ("Chu") in view of JP 2001-212253 ("Yasushi"). Applicant respectfully traverses this rejection as neither reference taken alone or in combination discloses the claimed invention.

To establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or combine references to arrive at the claimed subject matter. The prior art references must also teach or suggest all the limitations of the claim in question. See, M.P.E.P. § 706.02(j). A reference can only be used for what it clearly discloses or suggests. See, In re Hummer, 113 U.S.P.Q. 66 (C.C.P.A. 1957); In re Stencel, 4 U.S.P.Q.2d 1071, 1073 (Fed. Cir. 1987). Here, the references, whether taken individually or in combination, do not disclose or suggest the invention claimed by the Applicant.

Among the limitations of independent claim 1 not present in the cited reference is:

> one of said second scatterers which is caused to position in said passage region at a first position in the direction of travel of said charged particle beam having a thickness different from that of another one of said second scatterers which is caused to be positioned in said passage region at a second position upstream of said first position in

> the direction of travel of said charged particle beam so as [being configured] to provide smaller scattering strength of said charged particle beam in a direction perpendicular to the direction of travel of said charged particle beam than said another one of said second scatterers

The amendment to claim 1 clarifies the difference between the structures of the second scatterer at a first position and the second scatterer at a second position. It should be noted that each of Applicant's independent claims, claims 12, 17, 23, 26, 27, and 28 were amended in a similar manner to independent claim 1 and as such, the arguments set forth herein with respect to claim 1 apply to those independent claims as well.

As set forth in the present claims, the equipment comprises a first scatter device and a second scatter device, the second scatter device includes a plurality of second scatters through which the charged particle beams pass after having past the first scatterer of the first scatter device. The second scatterer device causing one of said plurality of second scatterers to position in a passage region of the charged particle beam at one of a different positions in the direction of travel of the charged particle beam. One of the second scatters in said passage region has a thickness different from that of another one of the second scatterers which is in the passage region at a second position upstream of the first position in the direction of travel of the charged particle beam so as to provide smaller scattering strength of the charged particle beam in a direction perpendicular to the direction of travel of the charged particle beam. As such, a double scattering method is defined by the claimed apparatus. See, specification at 2-3.

Further, a device according to the present claims provides both a long-range of a charged particle and high dose uniformity while increasing the range to alter a radiation field size. See page 33, line 26-page 35, line 10; Fig. 5a.

The features of the present invention reside in that the following points:

(a) The equipment comprises two scatterer devices of a first scatterer device and a second scatterer device;

(b) The second scatterer device includes a plurality of second scatterers through which the charged particle beam passes after having passed the first scatterer of the first scatterer device, the second scatterer device causing one of said plurality of second scatterers to position in a passage region of the charged particle beam at one of plural different positions in the direction of travel of the charged particle beam; and

(c) one of the second scatterers which is caused to position in said passage region at a first position in the direction of travel of the charged particle beam has a thickness different from that of another one of the second scatterers which is caused to position in the passage region at a second position upstream of the first position in the direction of travel of the charged particle beam so as to provide smaller scattering strength of the charged particle beam in a direction perpendicular to the direction of travel of the charged particle beam than said another one of the second scatterers.

Chu shows "First scatterer" and "second Scatterer" in FIGS. 35 and 36 on page 2081. It is incorrectly deemed that they correspond to the above features of the present invention. However, as apparent from those FIGS. 35 and 36, the "Second Scatterer" consists of only one scatterer, and not comprise a plurality of second scatterers, one of which is selectively positioned in the beam passage as in the above feature of the present invention. Further, on page 2082, right column, Chu mentions that the locations of the occluder assembly and the second scatterer is varied. This merely means that the location of the same scatterer (one second scatterer) is varied, but does not means that the different second scatterers are located at different positions or the upstream and downstream positions, as in the above features of the present

invention. Also, Chu et al. in now way teaches that the second scatterer located in the downstream position has a different thickness from the second scatterer located in the upstream position so as to provide smaller scattering strength of the charged particle beam than the second scatterer located in the upstream position, as in the above features (c) of the present invention.

In the first Office Action, page 3, the Examiner quotes the statement of Chu, page 2082, right column, stating "[t]his clearly teaches a person having ordinary skill in the art to position a second scatterer ... of the charged particle beam." It is then concluded that the above feature (c) before amendment is disclosed in Chu.

As mentioned above, Chu does not teach that the different second scatterers are located at the different positions or the upstream and downstream positions and that the second scatterer in the downstream position has a different thickness from the second scatterer in the downstream position so as to provide smaller scattering strength of the charged particle beam than the second scatterer in the upstream position.

Further, Chu states "[w]hen the energy of the beam is modulated by an absorber, and consequently the values of the beam widths are made larger," but the "absorber" in that statement is one to function as beam energy modulation means, but does not means one to function as the second scatterer as in the present invention. In other words, Chu merely teaches that the occluder assembly (and second scatterer 7) is moved when the beam energy is varied by the absorber, but does not mean "when the second scatterer is being configured to provide a smaller scattering strength" as alleged in the Office Action.

Yasushi discloses three scatterer devices 19, 20, 21 arranged in the different positions in the seventh embodiment shown in Figure 8. The three scatterer devices 19, 20, 21, are disclosed as "having the same structure" as mentioned in paragraph

[0138], but not ones having the different thicknesses as in the above features (c) of the present invention.

Further, in Yasushi, it is stated that each scatterer device is constructed using a metallic film or an organic film, and it comprises a plurality of organic films differing in thickness from one another (see [0137]). However, this refers to the films in the same position, but not that the different second scatterers are located at the different positions or the upstream and downstream positions, as in the above features (b) of the present invention. Further, Yasushi does not suggest the above features (c) of the present invention that the second scatterer in the downstream position has a different thickness from the second scatterer in the upstream position so as to provide smaller scattering strength of the charged particle beam than the second scatterer in the upstream position.

Accordingly, claim 1 is not obvious over Chu in view of Yasushi.

Yasushi is directed to the irradiation system of the scanning type, but not to the double scattering method type (the above features (a) of the present invention), and therefore the role of the scatterer device or the second scatterer device essentially differs between the present invention and Yasushi. As such, one would not combine the teachings of Yasushi with Chu.

More specifically, in the present invention, the second scatterer device has a role to provide the double scattering method type irradiation in combination with the first scatterer device. In order to attain, the advantages of both a long range of a charged particle beam in the patient body and high dose uniformity while increasing the range to alter irradiation field size, the second scatterer device comprises a plurality of second scatterers, the locations being different and the thicknesses (the scattering strengths) thereof being different as well.

On the other hand, in Yasushi, the scatterer device 19 which is originally not disposed in the scanning type irradiation system, is disposed in order to allow the beam diameter in the spot position in the diseased part in the body to be adjusted so as to attain a uniform doze over an irradiation area while the dose distribution achieves sharpness at the boundary of the irradiation area. See, [0025], [0028]. Further, in the embodiment shown in Figure 8, three scatterer devices 19, 20, 21 are disposed at the different positions to increase the choice of the difference in scattering strengths.

In this way, the role of the scatterer device essentially differs between the present invention and Yasushi, and resultantly, Yasushi does not relate to the underlying problem in the double scattering method type irradiation system to achieve both of a long range of a charged particle beam in the patient body and high dose uniformity while increasing the range to alter irradiation field size. Therefore, no motivation is seen in combining Chu and Yasushi, and thus, also in this sense, it is not believed that claim 1 is obvious over Chu in view of Yasushi.

The other independent claims of the present application, claims 12, 17, 23, 26, 27 and 28, also comprise substantially the same features as claim 1, and therefore are not obvious over Chu in view of Yasushi.

Applicants have responded to all of the rejections and objections recited in the Office Action. Reconsideration and a Notice of Allowance for all of the pending claims are therefore respectfully requested.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

If the Examiner believes an interview would be of assistance, the Examiner is welcome to contact the undersigned at the number listed below.

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Respectfully submitted,

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